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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,946	08/28/2003	Hiroshi Nagakubo	M1071.1861	7140

7590 04/17/2007
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EXAMINER

FICK, ANTHONY D

ART UNIT	PAPER NUMBER
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1753

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/649,946

Applicant(s)

NAGAKUBO ET AL.

Examiner

Anthony Fick

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 8/28/03 12/3/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Election/Restrictions

2. Applicant's election without traverse of group I, claims 1 through 8 in the reply filed on January 19, 2007 is acknowledged.
3. Applicant's cancellation of the non-elected claims, claims 9 through 19, is also acknowledged.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 6 through 8 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2000 090734 (JP '734).

JP '734 discloses a conductive paste used for the rear electrode of a silicon solar cell (abstract).

Regarding claim 1, the conductive paste comprises aluminum powder, a glass frit, an organic vehicle and particles of an aluminum organic compound (abstract solution).

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Regarding claim 6, JP '734 discloses the aluminum organic compound is 1 to 15% of the weight of the aluminum powder (paragraph 0012). This range includes values within the range of the claim, specifically 1%.

Regarding claim 7, JP '734 discloses percentages of each component within the paste; 50-75% aluminum, 0.5-5% glass frit, 20-30% organic vehicle (paragraph 0012). Once again these ranges include values within the ranges of the claim. JP '734 further discloses the aluminum particle sizes are 5-20 micrometers (paragraph 0024), overlapping the range of the claim.

Regarding claim 8, JP '734 discloses the use of acrylic resin and other aluminum resins (paragraphs 0026 and 0027).

6. Claims 1 through 4, 6 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 05 298917 (JP '917).

JP '917 discloses a composition for a conductive aluminum paste.

Regarding claim 1, the conductive paste comprises aluminum powder, a glass frit, an organic vehicle, and particles of carbon (paragraphs 0009-0011).

Regarding claim 2, JP '917 discloses the particle size is 0.05-100 micrometers (paragraph 0009). This range overlaps the range of the claim.

Regarding claims 3 and 6, JP '917 discloses the particle content of examples within the range of the claim. Table 2 shows carbon particles in the range of about 1.4 to about 7 parts by weight to 100 parts by weight of the aluminum powder (pastes 6 and 7).

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Regarding claims 4 and 7, table 2 further shows weight percents as within the claims.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2 through 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '734 as applied to claims 1 and 6 through 8 above, and further in view of Oya (U.S.P.G.Pub 2001/0029977).

The disclosure of JP '734 is as stated above for claims 1 and 6 through 8.

The difference between JP '734 and the claims is the requirement of particle sizes.

Oya teaches a conductive paste comprising an aluminum powder, a glass frit, and an organic vehicle (abstract). The particle sizes of the powders are between 2 and 10 microns (paragraph 0015).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the powder size of Oya for the organic particles of JP '734 because the particle size allows for increased contact area between the aluminum and the silicon and coverage of the alloy layer can be increased. Because Oya and JP '734 are both concerned with conductive pastes on silicon solar cells, one would have a

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reasonable expectation of success from the combination. Thus the combination meets the claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Fick whose telephone number is (571) 272-6393. The examiner can normally be reached on Monday - Friday 7 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Anthony Fick *ADF*
AU 1753
April 11, 2007


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SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700